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# RIFT DATA CENTER MANUAL

Report 406, Contract NAS 8-5600

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# RIFT DATA CENTER MANUAL

Report 406, Contract NAS 8-5600

Approved

*L. L. Woodward*

L. L. WOODWARD, Director  
NSP Test & Product Assurance

*H. F. Plank*

H. F. PLANK, Director  
Nuclear Space Programs  
Space Programs Division

*Lockheed*

**MISSILES & SPACE COMPANY**

A GROUP DIVISION OF LOCKHEED AIRCRAFT CORPORATION

SUNNYVALE, CALIFORNIA

## FOREWORD

This preliminary manual is prepared in compliance with item 406 of Data Submittal Document NSP-62-22. Contents consist of data developed to date in support of the RIFT Program Data Center System as well as proposed methods for implementing the center. Changes and additions of data will be incorporated into the manual, and also the methods of implementation will be subject to change as the effort progresses.

Included as Appendix A is a bibliography of narrative documents currently identified in the RIFT Program Data Center information pool. This bibliography will be updated periodically.

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S-N STAGE (RIFT) PROGRAM GLOSSARY  
(Pertaining to Data Submittal Document 406)

<u>Term</u>	<u>Abbreviation</u>	<u>Use</u>
Automatic Data Acquisition Management Control System	ADA/MCS	System for automatic data acquisition and retrieval which is part of the LMSC overall Management Information and Control System
Interservice Data Exchange Program	IDEP	Program for exchange of state-of-the-art data between government agencies and their contractors
Lockheed Missiles & Space Company	LMSC	Company within Lockheed Aircraft Corporation; located at Sunnyvale, California; responsible for S-N Stage (RIFT) Program
Marshall Space Flight Center	MSFC	Organization within NASA, with headquarters at Huntsville, Alabama; has overall responsibility for the Saturn Program
National Aeronautics and Space Administration	NASA	Government agency responsible for nonmilitary space programs
Nuclear Space Programs	NSP	Organization within LMSC responsible for the S-N Stage (RIFT) Program
Reactor-In-Flight-Test Program	RIFT	Program for development of a vehicle for utilizing nuclear propulsion in space
RIFT Master Data System	—	Manual or machine system which supports the RIFT Program Data Center. Consists of data banks with designated areas of data flow and designated responsible organizations



<u>Term</u>	<u>Abbreviation</u>	<u>Use</u>
Space Programs Division	SPD	Organization with LMSC responsible for conduct of NASA Programs

Section 1  
PURPOSE AND CONTENT

The purpose of the RIFT Data Center Manual is to assure compatibility of the RIFT Program Data Center with government and associated contractor systems and to set forth criteria for establishing, operating, and maintaining the system. The manual presents, as available or pertinent, the following type of information concerning the RIFT Program Data Center System:

- Methods proposed to develop and maintain the system
- Functional areas of responsibility for supplying technical and administrative data in support of the system
- Methods of collecting, processing, and reporting data in support of the system
- Milestones in the evolution of the system

Section 2  
DOCUMENT AUTHORITY

On approval of M-P&VE-N, the manual shall provide the guidance for NSP implementation of a RIFT Program Data Center.

The following documents, as dated, form a part of this manual to the extent shown in subsequent sections.

(1) NASA/MSFC

- 1a. Contract NAS 8-5600 - Exhibit C, paragraph 6.2
- 1b. Reliability Engineering Program Provisions for Space System Contractors (MSFC), M-REL-33-62, 1 June 1962
- 1c. Reliability Engineering Program Provisions for Space System Contractors (MSFC), M-REL-M-131-62, January 1963
- 1d. Quality Assurance Provisions for Space System Contractors (NASA), NPC 200-2, April 1962
- 1e. MSFC Automation Plan, 8 May 1962

(2) LMSC

- 2a. RIFT Reliability Program Plan, Report 400, Contract NAS 8-5600, NSP-62-1, Rev. 2, 15 August 1963
- 2b. NSP/RIFT Quality Assurance Program Plan, NSP-63-2, 15 February 1963
- 2c. RIFT Program Data Submittal Document, Report 108, NSP-62-22, Rev. 1, 18 February 1963
- 2d. RIFT Requirements Book GSE, Vol. 1, NSP-62-61
- 2e. RIFT Stage Overall Program Plan, NSP-62-51, Rev 1

(3) DOD and OTHER AGENCIES

- 3a. IDEP-1, Procedures for Participants, Interservice Data Exchange Program, March 1963

### Section 3

## RIFT MASTER DATA SYSTEM

### 3.1 GUIDELINES FOR ESTABLISHMENT

The stipulation of applicable document 1a (Ref. Section 2) requires continued activity leading to the establishment of the RIFT Program Data Center. Guidance in applicable document 1b calls for a center to accept and retrieve pertinent information relative to the development, manufacture, operation, and reliability status of the system, and to function not only for reliability data handling and processing, but also for information necessary for design, development, manufacturing and quality control. Applicable document 1c repeats the guidance noted above and stipulates that the data center provide a single source for the subject data. Documents 1b and 1c contain listings of typical data to be generated by the data center. Section IE of applicable document 1e lists typical input and output data of the planned Marshall Space Flight Center Master Data System. Table 3-1 lists the data reports called for by these documents, and Table 3-2 indicates additional data called for in applicable document 1d which is supportable by data required for reports of Table 3-1.

Additional guidelines for implementing the system are in Lockheed Policy Directives and are further interpreted in applicable documents 2a and 2b.

Responsibility for implementing this system is vested in the Nuclear Space Programs (NSP) organization of the Space Programs Division (SPD) of Lockheed Missiles & Space Company (LMSC).

Table 3-1  
REPORTS REQUIRED SUPPORTING DOCUMENTS 1b AND 1c

<u>Data Reports</u>	Section of M-REL-E	
	<u>33-62</u>	<u>131-62</u>
Parts Usage List	3.16	9.3
Qualified Parts List	3.16	9.3
Limited Life Items & Change of Status Thereof	3.16	9.3
Correlation of environmental and test data with design and specification requirements	3.16	9.3
Data on mode, cause, corrective action and follow-up of equipment failures in develop- ment, manufacturing, and field use	3.16	9.3
Summarize data on deviating materials	3.16	9.3

Table 3-2  
DATA REQUIRED SUPPORTING DOCUMENT 1d  
(Supportable by Input to Data Reports of Table 3-1)

Data Called for in NPC 200-2

- Qualification Status List
- Supplier Rating & Preferred Source Lists
- End-Item Test Plan
  - Parameters for Inspection & Test
  - Nominal & Tolerance Values
  - Sequence of Tests
- Monthly Quality Tabulations
- End-Item Narrative Report
  - Final Configuration (as-built)
  - Removal & Replacement
  - Total Operating Time

### 3.2 DESCRIPTION

The obligations of the applicable documents will be satisfied by a Master Data System consisting of a number of data banks. The system will use an appropriate balance between manual and machine methods.

#### 3.2.1 Structure

The Master Data System will likely consist of six data banks utilizing common language and tentatively identified as follows:

- (1) Engineering
- (2) Manufacturing
- (3) Logistics and Material
- (4) Quality
- (5) Reliability
- (6) Test Operations

Data to be considered for storage in the banks, potential reports to be derived therefrom, and data system specifications required to develop the inputs or outputs are listed in Table 3-3. The listing is only typical and is incomplete. Data banks which have been established are indicated by a single asterisk.

#### 3.2.2 Responsibilities

- (1) Principle responsibility for interpreting and meeting contractual obligations concerning the data system and identifying internal needs serviceable by the system will be vested in the organizations shown in Table 3-3. These organizations will also define the desired content of the consigned data banks and sponsor necessary interorganizational procedures affecting NSP organizations only.
- (2) Administrative Systems Planning & Programming, LMSC Organization 21-40, specifically provides institutional support in planning, developing, programming and installing the system.

Table 3-3  
RIFT PROGRAM DATA CENTER SYSTEM

Data Bank	Responsible Organization (RIFT)	Potential Data Input	Potential Output	Specific Coverage Required (Subject to Change)
Engineering*	Engineering	Drawing identity Test parameters Specification identity List of material (L/M) Change & effectivity Analytic data	Lists of material Component usage Indented L/M index Weight and balance Limited-life items list Deviation waivers	LMSC Data Processing Spec. 90-01  Yes** Yes**
Manufacturing	Manufacturing	Vehicle segment Serialization as applied Operating and age	As-built list Remove and replace Actual life of items	Yes***  Yes***  Yes**
Logistics and Material	Procurement	Make/buy Inventory Delivery Material requirements	Make/buy list	
Quality	Quality Assurance	Inspection requirements Inspection results Vendor survey Deviations found Calibration	Deviation summary Approved suppliers Accept/reject summary	Yes** Yes***

Table 3-3 (Cont.)		Potential Data Input	Potential Output	Specific Coverage Required (Subject to Change)
Data Bank	Responsible Organization (RLFT)			
Reliability	Reliability	Part failure rate Part application Reliability model Function discrepancies	Critical items list Preferred parts Failure and corrective action Qualified parts	Yes** Yes** Yes**
Test Operations	Test Operations	Test results Field operations Consumption	Qualification status Spares As is	Yes***

\*Data bank established

\*\*Supports stipulations of M-REL-E-131-62

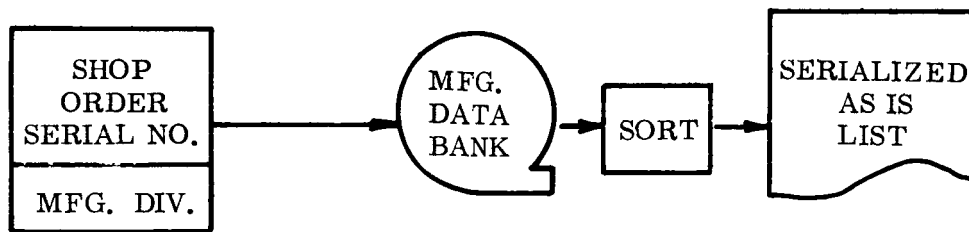
\*\*\*Supports end-item report requirements, NPC 200-2



- (3) A RIFT Program Administrative Systems Coordinator, authorized by LMSC management-policy and direction, will approve or disapprove all proposed data subsystems prior to their installation, and sponsor necessary interorganizational procedures affecting LMSC organizations outside of NSP.

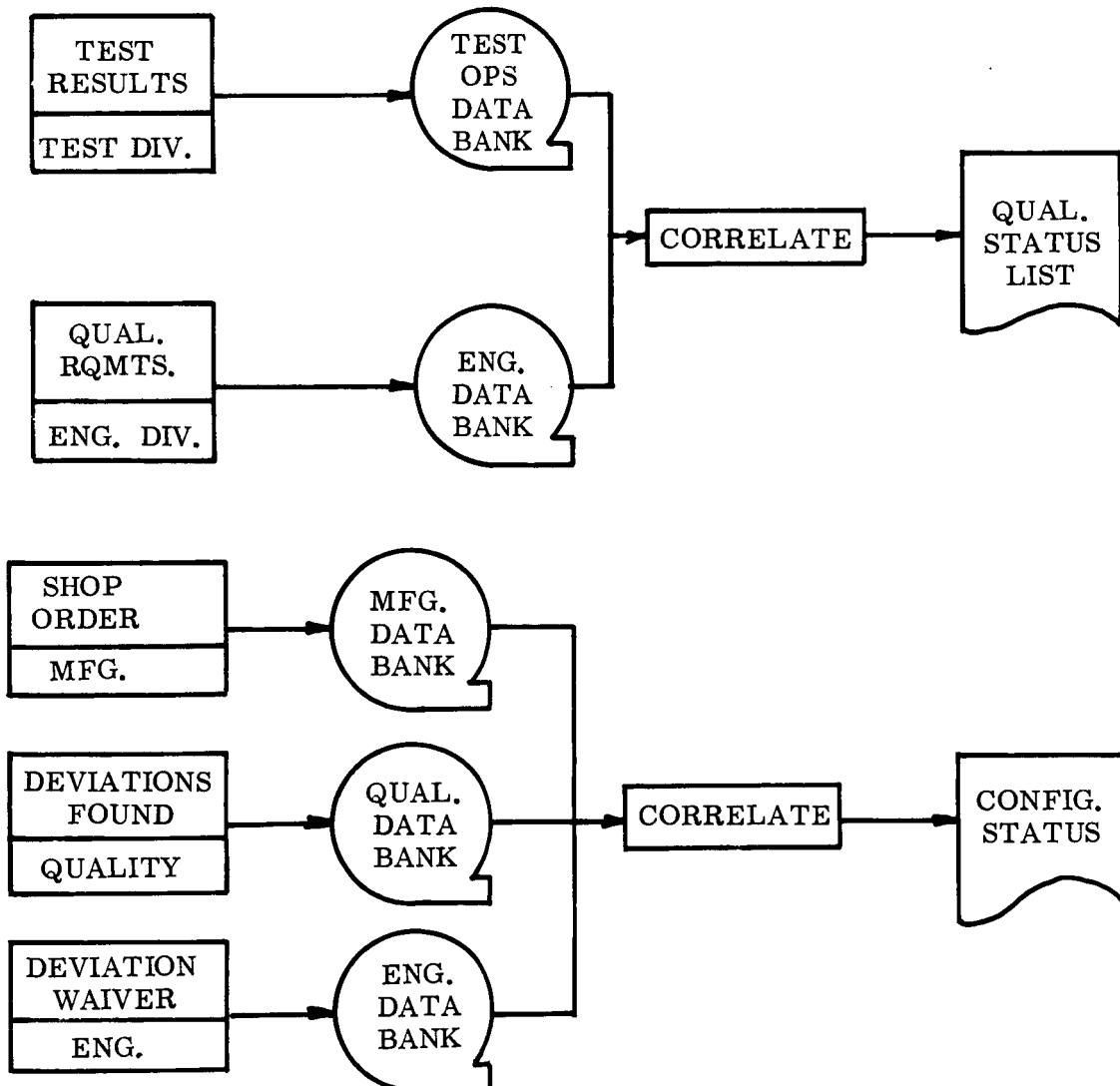
### 3.2.3 Method

- (1) The data banks will be supplied pertinent operating information and produce records and reports required for contractual compliance and management guidance. Hypothetical data flow is shown in Fig. 3-1. Some portions of the master system requirements will be satisfied by correlating the data in several banks as shown in Fig. 3-2. Data elements will be standardized and simplified in order to satisfy this need for correlation among the data banks.
- (2) In developing the subject system, the RIFT Program organization will transmit its requirements, subject to approval of the Program Administrative Systems Coordinator, and provide data to organization 21-40 which will:
  - a. Assist in developing requirement specifications which furnish sufficient information to scope the application
  - b. Prepare performance specifications stipulating input data characteristics and format for project organization approval
  - c. Write the machine programs which convert input data to output reports
- (3) Development of means to produce each output report will be handled as an individual project coordinated within the system, with milestones compatible with the report need, and using standard data formatting when system common data are involved.



NSP 6707

Fig. 3-1 Typical Data Flow - Single Bank



NSP 6708

Fig. 3-2 Typical Data Flow - Several Banks

## Section 4

### DATA SYSTEM DEFINITIONS

#### 4.1 RIFT MASTER DATA SYSTEM

- (1) The integrated set of data banks and data processing and communication procedures used to implement the RIFT Program Data Center.

#### 4.2 DATA BANKS

- (1) Engineering Data Bank – Contains those technical data required to define the product as established by Engineering.
- (2) Manufacturing Data Bank – Contains those data necessary to describe the product, as-built.
- (3) Logistics and Material Data Bank – Contains data relative to the procurement of hardware and material required for the RIFT system.
- (4) Quality Data Bank – Contains quality data required for or resulting from planning, fabrication, procurement, test, inspection and use of RIFT articles.
- (5) Reliability Data Bank – Contains data required for evaluating the reliability of the RIFT hardware and system in accordance with established mathematical models, reliability predictions, and allocations.
- (6) Test Operations Data Bank – Contains development, qualification, and field test data; and operational, safety, and transport data concerning RIFT ground support equipment, facilities, and vehicle hardware.

## Section 5

### DATA SYSTEM STANDARDS

The RIFT Master Data System will incorporate standard methods of charting flow and recording data, standard symbols, standard nomenclature, and standard filing indices and methods.

#### 5.1 ELEMENTS

Currently, the data elements shown in Table 5-1 have been identified as requiring standardization. The standards listed will be used whenever applicable in the data system and will be shown wherever applicable in specifications evolved to implement the system.

#### 5.2 SPECIFICATIONS

Details required to implement the data system are to be included in Systems and Performance Specification publications. The specifications shall contain enough detailed information to ensure integrated and complete implemented systems.

#### 5.3 PROCEDURES

Interorganizational procedures required to assure orderly insertion of data into the system will be developed within the framework of a singular set of matrices and flow charts to assure consistent assignment of responsibilities, avoidance of needless redundancy of input data, and proper relationship among procedures.

Table 5-1  
STANDARDIZED DATA ELEMENTS

<u>Item No.</u>	<u>Field Title</u>	<u>Format*</u>
1	Model - First Use	A (4)
2	Layout Reference No.	9 (7)
3	List of Material No.	9 (11)
4	L/M Engineering Order	9 (5)
5	L/M Issue No.	9 (2)
6	Find No.	8 (3)
7	Zone No.	A (3)
8	Code Identity	9 (5)
9	Part No.	A (15)
10	Part Description	A (12)
11	Part Quantity per Assembly	A (3)
12	References and Notes	A (48)
13	Supplier	9 (5)
14	Date Issued	89-89-89
15	Quantity Items Inspected	8 (6)
16	Quantity Items Defective	8 (4)
17	Load Center	9 (3)
18	Part Class Code	A (4)
19	Type Inspection	9 (1)
20	Manufacturing Inspection Point No.	9 (3)
21	Inspection Report No.	9 (6)
22	Inspection Date	9 (3)
23	Item Serial	9 (7)
24	Disposition Code	9 (2)
25	Defect Code	9 (3)
26	Cause Code	9 (2)

\*Word length composition - A = alphanumeric; 8 = blank places numeric character is non-significant zero; 9 = numeric character; ( ) = number of characters in the word.

Table 5-1 (Cont.)

<u>Item No.</u>	<u>Field Title</u>	<u>Format*</u>
27	Shop Order No.	9 (6)
28	Project	9 (1)
29	Quantity Item Received	8 (4)
30	Sampling Plan	A (3)
31	Production Quality Control	9 (4)
32	Inspection Organization	9 (4)
33	Inspection Stamp	9 (3)
34	Work Order Class	9 (2)
35	Work Order No.	9 (4)
36	Plant No.	9 (1)
37	Type Document	9 (1)
38	Attribute/Parameter	9 (10)
39	Acceptance Test Procurement	9 (10)
40	Lockheed Classified Defects	9 (10)
41	Waiver	A (1)
42	Scrap Cost	9 (5)0.99
43	Lot No.	A (10)
44	Unit of Measure	A (2)
45	Engineering Document Code	A (3)
46	Engineering Order Reference	9 (5)
47	Engineering Job No.	A (6)
48	Model No.	A (4)
49	Revision Letter Status	A (2)
50	Critical Life Item Code	A (1)
51	Make/Buy Code	A (1)
52	Serial, From-Through	9 (3)

---

\*Word length composition - A = alphanumeric; 8 = blank places numeric character is non-significant zero; 9 = numeric character; ( ) = number of characters in the word.

## Section 6

### DATA SYSTEM INTERFACES

In order for the RIFT Master Data System to be compatible with other data systems, potential interfaces between this system and such other systems must be identified. These interfaces are in two categories – external to LMSC and internal to LMSC.

#### 6.1 EXTERNAL TO LMSC

##### 6.1.1 Marshall Space Flight Center (MSFC)

As a part of a general automation plan, a central data retrieval and data storage system has been planned at MSFC. If the need warrants, stage contractor facilities may be linked to this data center. Data format will be IBM 729, Model II and Model IV binary coded decimal on seven-channel magnetic tape, with a density of 200 or 556 bits per inch. Requirements such as coding for the central computer and arranging of sequence for printout are being resolved at MSFC. The RIFT Master Data System plan includes provisions for compatibility with the Marshall Automation Plan.

##### 6.1.2 Interservice Data Exchange Program (IDEP)

Interservice Data Exchange Program report data, as defined in IDEP-1, Procedures for Participants, March 1963, is to be used to update reliability historical data files. The processing of these data into the historical data files will provide up-to-date reliability performance criteria. The RIFT Master Data System will accumulate IDEP data with a minimum of translation.

## 6.2 INTERNAL TO LMSC

### 6.2.1 Automatic Data Acquisition/Management Control System (ADA/MCS)

An automatic data acquisition and retrieval system is part of Lockheed's overall Management Information and Control System. The ADA/MCS, presently operating in the production area, provides continuously updated information concerning the location and status of active shop orders and related parts as they move through the manufacturing cycle. Additional uses for ADA/MCS are being phased in rapidly. Applications scheduled in the immediate future include inventory control, vendors' price history records, and suppliers' product performance ratings.

Compatibility with the RIFT System is now in the planning stages.

### 6.2.2 Central Computing Services

Functional interface between RIFT and operations divisions for variables data processing will be in accordance with specifications derived in support of Section 4 of RIFT Requirements Book, GSE Vol. 1, NSP-62-61.



## Section 7

### DATA SYSTEM RESPONSIBILITY

#### 7.1 MAJOR AREAS OF ORGANIZATIONAL ACTIVITY

Three major areas of NSP organizational activity are as follows:

- (1) Functional Data Bank Organization – Identify operating data to be assembled, classified, codified, and stored into functional data banks within the system
- (2) Data Center Establishment – Establish a system to collect, record, store, process, and distribute data for the Program Data Center.
- (3) RIFT Data Program Integration – Modify or expand existing methods to achieve required compatibility among the data banks and between the RIFT Master Data System and other data systems with which this system has interfaces

#### 7.2 TASKS

In order that the entire plan will be methodically executed, ten tasks, outlined in Table 7-1, have been established. These tasks are to be performed or supported by each responsible organization as was noted in Table 3-1. The tasks are to be coordinated through the working RIFT Program Data Center Committee.

#### 7.3 GUIDANCE AND COORDINATION

Necessary guidance and coordination will be provided by MSFC through M-P&VE-N to assure achieving compatibility between the RIFT Master Data System and the system evolved at Marshall Space Flight Center.

Table 7-1  
RIFT PROGRAM DATA CENTER TASKS

<u>Task</u>	<u>Action Required</u>
1	Review applicable contractual documents to establish output data reports Requirements.
2	Correlate these output data reports requirements with internal operating systems to determine adequacy.
3	Propose additional output data reports requirements of value to NSP.
4	Determine input data requirements and systems requirements to provide compatibility.
5	Integrate the requirements with similar requirements common to the Master Data System.
6	Determine a priority for establishing mechanized output reporting requirements in consonance with the <u>RIFT Stage Overall Program Plan</u> , and obtain approval of the Program Administrative Systems Coordinator.
7	Standardize and format supporting documents and data required to implement the output data requirements.
8	Make test runs of the output data report and evaluate to correct deficiencies; establish job instructions; and determine manpower, equipment, and space and layout requirements.
9	Install the data system, subject to approval of the Program Administrative Systems Coordinator.
10	Setup a system audit and follow-up procedure.

Section 8  
DATA CENTER GLOSSARY

This section will contain a glossary of standard terms used in the RIFT Program Data Center. The current glossary is being coordinated and will be provided in future revisions to this document.

Section 9  
DATA CENTER DATA MATRICES

This section will contain matrices correlating data bank inputs to input source documents and to output data reports.

Appendix A  
APPLICABLE DOCUMENTATION BIBLIOGRAPHY

The following bibliography of narrative documents is identified in the RIFT Program Data Center information pool. This bibliography will be updated periodically.

Appendix A  
APPLICABLE DOCUMENTATION BIBLIOGRAPHY

<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
1	43	MIL-STD-9 A Screw Thread Conventions & Methods of Specifying	Mil Std	5-26-60	DOD Index of Specs and Standards
2	43	MIL-STD-105 Sampling Procedures & Tables for Inspection by Attributes	Mil Std	7-18-61	DOD Index of Specs and Standards
3	43	ANA BULL 143 Rev D Specifications & Standards, Use of	Gov Std	9-18-58	DOD Index of Specs and Standards
4	43	ANA BULL 400 Rev M Electronic Equipment Aircraft & Guided Missiles Applicable Documents with Information Notice #1	Gov Std	10-15-58	DOD Index of Specs and Standards
5	43	MIL-P-5518 C Supp 1 Pneumatic Systems, Aircraft Design, Installation & Data Requirements for	Mil Spec	7-9-62	DOD Index of Specs and Standards
6	43	MIL-I-6181 D Rev 2 Interference Control Require- ments, Aircraft Equipment	Mil Spec	6-1-62	DOD Index of Specs and Standards
7	43	MIL-P-7105 A Pipe Threads, Taper, Aero- nautical National Form, Symbol ANPT	Mil Spec	7-5-62	DOD Index of Specs and Standards

## Appendix A (Cont.)

<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
8	43	MIL-S-7742 Screw Threads Standard, Optimum Selected Series General Specification for	Mil Spec	12-3-59	DOD Index of Specs and Standards
9	44	ASME ASME Boiler and Pressure Vessel Code, Unfired Pres- sure Vessels, Sec VIII	Ind Std	1962	ASME Boiler and Pressure Vessel Code
10	44	NFPA Electrical Safety Orders, State of California	State Elec Code	10-59	Electrical Safety Orders, State of Calif. Div Indstrl Safety, San Fran.
11	44	ASA B16.9-1951 Steel Butt-Welding Fittings	Ind Std	-	ASA Catalog of Amer Standards Index - 1962
12	44	ASA B18.2-1960 Square & Hexagon Bolts & Nuts	Ind Std	-	ASA Catalog of Amer Standards Index - 1962
13	44	ASA B36.19-1957 Stainless Steel Pipe	Ind Std	-	ASA Catalog of Amer Standards Index - 1962
14	44	NBFU No. 70 Natl Electric Code, Std for Electr Wiring & Apparatus	Natl Elec Code	1962	Natl Bd of Fire Under- writers Publication Index
15	44	ASTM A-182-61T Specs for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings & Valves & Parts for General Service	Ind Std	-	ASTM Standards Book of (1961)

Appendix A (Cont.)

<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
16	44	ASTM A-193-62T Specs for Alloy-Steel Bolting Materials for High-Temperature Service	Ind Std	-	ASTM Standards, Book of (1961)
17	44	ASTM A-194-62T Specs for Carbon & Alloy Steel Nuts for Bolts for High-Pressure & High- Temperature Service	Ind Std	-	ASTM Standards, Book of (1961)
18	46	MIL-E-5272 C #1 Environmental Testing, Aero- nautical & Associated Equip- ment, General Specs for	Mil Spec	1-20-60	DOD Index of Specs and Standards
19	46	MIL-S-5944 A #1 Slings, Aircraft, General Specifications for	Mil Spec	10-22-59	DOD Index of Specs and Standards
20	46	MIL-E-8189 B Rev 1 Electronic Equipment Guided Missiles, General Specifica- tions for	Mil Spec	10-22-58	DOD Index of Specs and Standards
21	48	LAC 0942 Tubing Assemblys, Preparation & Installation of	Lockheed Spec	12-1-61	Lockheed Aircraft Corp (LMSC) Process Spec Manual
22	48	65?0006 Rev B RIFT Ground System - 9' Tank Cryogenic & Pneumatic Compo- nents, General Specs for	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec

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## Appendix A (Cont.)

<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
23	48	6520012 Rev A Primary Tank Pressurization Inflow Regulation Spec	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
24	48	6520013 Rev A Tank Pressurization Outflow Regulation Spec	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
25	48	6520014 Rev B Safety Relief Valve Spec	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
26	48	6520015 Rev C Bursting Disc Spec	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
27	48	6520016 Rev A Purge & Cooldown Vent	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
28	48	6520017 Rev A Modulating Drain Valve Spec	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
29	48	6520019 Rev A Emergency Tank Pressure Regulator Spec	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
30	48	6520023 Rev A Purge Sampling Valve	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
31	48	6520025 Rev B LH <sub>2</sub> Magnetostrictive Liquid Level Control, 9' Tank	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec

## Appendix A (Cont.)

<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
32	48	6520026 Rev B LH <sub>2</sub> Continuous Liquid Level Monitoring Subsystem, 9' Tank	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
33	48	6520028 Rev A Gas Analyzer - Hydrogen & Oxygen, Type II Low Range IA High Range IB	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
34	48	6520030 Rev A GN <sub>2</sub> Manual Shutoff Valve, 9' Tank Spec	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
35	48	6520031 Rev A GH <sub>2</sub> Regulator with Integ Relief Valve Spec	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
36	48	6520037 Rev A Pressure Switch - Dual Control (9' Tank)	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
37	48	652800 Rev B Proof & Leakage Test - Piping Assemblies, 9' Tank	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
38	48	6528001 Rev B Type I, Insulation Test Series (9' Tank)	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
39	48	6528002 Rev B System Validation Test Spec, 9' Tank Complex	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
40	48	6528003 Rev A Sheet, Rod, Tubing & Tape- Impregnated & Glass-Filled Material	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
41	48	6528004 Rev A 9' Tank Design Safety Procedures	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
42	48	6540002 Rev C 9' Tank - Hydrostatic Test	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
43	49	MIL-C-17/71 A Cable, Radio Frequency, Coaxial, Type RG-196A/U	Mil Spec	1-12-61	DOD Index of Specs and Standards
44	49	MIL-E-74 B Enamel, Lusterless, Quick- Drying	Mil Spec	9-13-60	DOD Index of Specs and Standards
45	49	TT-V-121 C #1 Varnish, Spar, Water- Resisting	Fed Spec	9-11-51	DOD Index of Specs and Standards
46	49	MIL-V-173 B #1 Varnish, Moisture-and-Fungus Resistant (for the treatment of communications, electronic and associated electrical equipment)	Mil Spec	1-19-61	DOD Index of Specs and Standards
47	49	QQ-A-268 A #1 Aluminum Alloy Bars, Rods & Wire, Rolled, Drawn or Cold Finished, 2024	Fed Spec	11-22-60	DOD Index of Specs and Standards

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
48	49	QQ-A-270 A Rev 1 Aluminum Alloy, Bars, Rods & Shapes, Extruded, 6060 & 6062	Fed Spec	9-24-59	DOD Index of Specs and Standards
49	49	QQ-A-274 A Aluminum Alloy Bars, Rods & Shapes, Extruded 6063	Fed Spec	9-21-61	DOD Index of Specs and Standards
50	49	QQ-A-318 C Rev 2 Aluminum Alloy Plate & Sheet 5052	Fed Spec	4-10-61	DOD Index of Specs and Standards
51	49	QQ-A-325 B Aluminum Alloy Bars, Rods, Wire and Special Shapes, Rolled, Drawn or Cold Finished, 6061	Fed Spec	6-20-60	DOD Index of Specs and Standards
52	49	QQ-A-327 B Aluminum Alloy Plate & Sheet 6061	Fed Spec	3-7-58	DOD Index of Specs and Standards
53	49	QQ-A-362 B #1 Aluminum Alloy Plate & Sheet AL Clad 2024	Fed Spec	9-20-60	DOD Index of Specs and Standards
54	49	BB-N-411 A Nitrogen	Fed Spec	11-9-55	DOD Index of Specs and Standards
55	49	QQ-C-533 #2 Copper-Beryllium Alloy Strip	Fed Spec	9-3-57	DOD Index of Specs and Standards

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
56	49	QQ-A-561 D Aluminum Alloy Plate & Sheet, 1100	Fed Spec	10-9-61	DOD Index of Specs and Standards
57	49	QQ-S-561 D #1 Solder, Silver	Fed Spec	9-27-51	DOD Index of Specs and Standards
58	49	QQ-S-571 C Rev 2 Solder, Lead Alloy, Tin Lead Alloy and Tin Alloy, Flux Cored Ribbon and Wire, Solid Form	Fed Spec	5-4-60	DOD Index of Specs and Standards
59	49	TT-I-588 Ink, Marking Stencil, Opaque, Non-Porous Surfaces Metals, Glass, etc	Fed Spec	6-12-57	DOD Index of Specs and Standards
60	49	MIL-I-631 D Insulation, Electrical, Syn- thetic-Resin Composition, Non-Rigid	Mil Spec	11-15-61	DOD Index of Specs and Standards
61	49	TT-P-664 #1 Primer, Coating, Synthetic Rust-Inhibiting, Lacquer- Resisting	Fed Spec	6-2-55	DOD Index of Specs and Standards
62	49	WW-T-731 C Tubes, Steel & Open Hearth Iron, Seamless & Welded, Boiler Use	Fed Spec	4-4-56	DOD Index of Specs and Standards

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
63	49	QQ-S-763 B #1 Steel Bars, Shapes, & Forgings - Corrosion- Resisting	Fed Spec	1-8-58	DOD Index of Specs and Standards
64	49	QQ-S-766 C #2 Steel Plates, Sheets & Strip Corrosion Resisting	Fed Spec	4-16-62	DOD Index of Specs and Standards
65	49	MIL-S-854 Steel, Corrosion-Resisting, Plates, Sheets, Strips, as applicable	Mil Spec	1-25-60	DOD Index of Specs and Standards
66	49	MIL-W-1511 A #3 Wire Rope, Steel (Carbon) Flexible, Preformed	Mil Spec	2-25-63	DOD Index of Specs and Standards
67	49	MIL-S-4043 A Steel, Corrosion-Resisting (Extra Low Carbon Type 304), Plate, Sheet & Strip (ASG)	Mil Spec	1-16-61	DOD Index of Specs and Standards
68	49	MIL-A-5090 D Adhesives, Heat-Resistant, Airframe Structural, Metal to Metal	Mil Spec	8-3-60	DOD Index of Specs and Standards
69	49	MIL-G-6183 #4 Gaskets & Sheet Gasket Material, Synthetic Rubber & Cork Composition	Mil Spec	8-22-57	DOD Index of Specs and Standards

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
70	49	MIL-S-6721B #1 Steel, Corrosion and Heat- Resistant (Chemically Stabilized) Plate, Sheet & Strip	MIL Spec	3-13-63	DOD Index of Specs and Standards
71	49	MIL-T-6845 #5 Tubing, Steel, Corrosion- Resisting (18-18) Aircraft, Hydraulic System	MIL Spec	8-16-56	DOD Index of Specs and Standards
72	49	MIL-T-7003 Trichlorethylene, Stabilized Degreasing	MIL Spec	9-5-50	DOD Index of Specs and Standards
73	49	MIL-T-7081 C Tube, Aluminum Alloy, Seamless Round, 6061 & 6062 Aircraft Hydraulic Quality	MIL Spec	4-3-59	DOD Index of Specs and Standards
74	49	MIL-I-7444 B Insulation Sleeving, Electrical, Flexible	MIL Spec	12-9-58	DOD Index of Specs and Standards
75	49	MIL-T-8504 Rev 2 Tubing, Steel, Corrosion- Resistant (18-8) Annealed, Aircraft Hydraulic System (ASG)	MIL Spec	6-7-56	DOD Index of Specs and Standards
76	49	MIL-T-8506 Rev 1 Tubing, Steel, Corrosion- Resistant, #304, Annealed	MIL Spec	3-20-56	DOD Index of Specs and Standards

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
77	49	MIL-C-9084 B Cloth, Glass, Finished, for Polyester Resin Laminates	Mil Spec	1-22-60	DOD Index of Specs and Standards
78	49	MIL-W-16878 D Supp 1A Wire, Electrical, Insulated, High Temperature (Navy)	Mil Spec	1-16-61	DOD Index of Specs and Standards
79	49	MIL-S-18728 B Steel Plate, Sheet, and Strip, Alloy, 8630, Aircraft Quality	Mil Spec	10-3-57	DOD Index of Specs and Standards
80	49	MIL-S-18729 Steel Plate, Sheet, and Strip, Alloy, 4130, Aircraft Quality	Mil Spec	10-3-57	DOD Index of Specs and Standards
81	49	MIL-A19005 (A) Aluminum Alloy Bars, Rods, and Structural and Special Shaped Section-Extruded	Mil Spec	12-7-60	DOD Index of Specs and Standards
82	49	MIL-L-19537 A Lacquer, Acrylic-Nitrocellulose Loss (For Aircraft Use)	Mil Spec	7-19-60	DOD Index of Specs and Standards
83	49	MIL-W19583 Wire, Electrical, Magnet, High Temperature, Film-Insulated (Superseded by MIL-W-5838) Cancelled	Mil Spec	12-15-59	DOD Index of Specs and Standards
84	49	MIL-A-19842 (C) Aluminum Alloy Plate and Sheet	Mil Spec	10-16-61	DOD Index of Specs and Standards



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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
85	49	MIL-P-21105 B #2 Plastic, Sheet Acrylic Heat Resistant (Utility Grades)	Mil Spec	1-10-61	DOD Index of Specs and Standards
86	49	MIL-L-22273 Lubricant, Solid Film, Dry	Mil Spec	12-3-59	DOD Index of Specs and Standards
87	49	MIL-A-25055 Adhesive, Acrylic Monomer and Polymer Base, for Acrylic Plastics	Mil Spec	6-17-57	DOD Index of Specs and Standards
88	49	MIL-P-25421 A #1 Plastic Materials Glass Fiber Base-Eposy Resin, Low Pres- sure Laminated	Mil Spec	6-30-61	DOD Index of Specs and Standards
89	49	MIL-P-27401 A Propellant, Nitrogen, Pressurizing	Mil Spec	11-7-60	DOD Index of Specs and Standards
90	50	ASTM-A-7-61T Specification for Steel for Bridges and Buildings	Ind Std	-	ASTM Standards Book of (1961)
91	50	1A2.0 Froth, Poly Foam Hohlfelder, F., Co. Cleveland, Ohio	Coml Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs)
92	50	CPR-20-2 Resin/Activator Foam Chemical Plastic Corp., Torrance, California	Coml Spec	-	Vendor Catalogue

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
93	50	EAG-20-AT Iron Constantan TC Wire Thermo Electric Co., Inc. Fairlawn, N. J. (78727)	Coml Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs) Vendor Catalogue
94	50	21-773 Paint Specification, yellow color Walker Paint Co., Inc. Sunnyvale, California	Coml Spec	-	Vendor Catalogue
95	50	26-4106 Filler, Glass Fibre, Milled Lockheed A/C, MSD, Sunnyvale	LMSC Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs)
96	50	LM52 Activator Lefingwell Chemical Co. Whittier, Calif. (13414)	Coml Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs) Vendor Catalogue
97	50	M-80-50CX Spengel Spender-Kellogg Div., Textron Inc. Buffalo, N. Y.	Coml Spec	-	Vendor Catalogue
98	50	RTV 102 Silicon Rubber Adhesive Sealant General Elec. Co., Silicon Products Dept. of Chemical Div., Industrial Products Group Watertown, N. Y. (01139)	Coml Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs)

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
99	50	109 Actuator Leffingwell Chemical Co. Whittier, California	Coml Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs)
100	50	ASTM A-312-62T Spec for Seamless and Welded Austenitic Stainless Steel Pipe	Ind Std	-	ASTM Standards, Book of (1961)
101	50	DF-517 Dye, Yellow Ultra-Violet Products, Inc. (61562) Los Angeles	Coml Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs) Vendor Catalogue
102	50	DF-518 Dye, Blue Ultra-Violet Products, Inc. (61562) Los Angeles	Coml Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs) Vendor Catalogue
103	50	DF-522 Dye, Red Ultra-Violet Products, Inc. (61562) Los Angeles	Coml Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs) Vendor Catalogue
104	50	ERL 2795 Bakelite Resin, Resin Coat Union Carbide Chemicals Div. (10608) Union Carbide & Carbide, N. Y. N. Y.	Coml Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs) Vendor Catalogue
		Bak-Co Mfg. Co., Tenafly, N. J. (01611)			Cataloging Handbook H4-2 (Federal Supply Code for Mfrs) Vendor Catalogue

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
105	50	ERL 2807 Bakelite Catalyst, Resin Coat Union Carbide Chemicals Div. (10608) Union Carbon & Carbide, N. Y. N. Y.	Coml Spec	-	Cataloging Handbook H4-2 (Federal Supply Code for Mfrs) Vendor Catalogue
		Bak-Co Mfg. Co., Tenafly, N.J. (10611)			Cataloging Handbook H4-2 (Federal Supply Code for Mfrs) Vendor Catalogue
106	50	AMS 3651 Polytetrafluoroethylene	Ind Std	-	AMS - Index SAE Aerospace Material Specs
107	51	6530003 Rev A Sheet, Rod, Tubing & Tape- Impregnated & Glass Filled Material	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
108	52	ABMA-PD-R-27A Radiographic Inspection of Welds	NSP Spec	-	Lockheed Aircraft Corp (NSP 63-16) NSP Design Manual
109	52	ABMA-PD-E-53 Electrical Wiring Procedure	Army Spec	2-11-60	MSFC Index of Specs, Standards and Procedures
110	52	MIL-STD-129 C Marking for Shipment and Storage	Mil Std	7-11-60	DOD Index of Specs and Standards

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
111	52	MIL-STD-130 P Identification Marking of U. S. Military Property	Mil Std	4-24-62	DOD Index of Specs and Standards
112	52	MSFC-STD-156 Riveting, Fabrication and In- specification, Standard for (Notice #1, Nov. 14, 1962)	MSFC Std	4-2-62	MSFC Index of Specs, Standards and Procedures
113	52	MSFC-Proc-158 A Soldering of Electrical Con- nections (High-Reliability) Procedure For	MSFC Proc	4-12-62	MSFC Index of Specs, Standards and Procedures
114	52	MSFC-Proc-164 Cleanliness of Components for Use in Oxygen, Fuel, and Pneu- matic Systems, Specifications For	MSFC Spec	4-16-62	MSFC Index of Specs, Standards and Procedures
115	52	MIL-STD-171 Finishing of Metal and Wood Surfaces	Mil Std	10-11-60	DOD Index of Specs and Standards
116	52	QQ-P-416 A #1 Plating, Cadmium (Electro Deposited)	Fed Spec	12-1-61	DOD Index of Specs and Standards
117	52	FED-STD-595 Colors	Fed Std	3-1-56	DOD Index of Specs and Standards
118	52	MIL-S-5002 #2 Surface Treatment (Except Priming and Painting) for Metal and Metal Parts in Aircraft	Mil Spec	10-23-56	DOD Index of Specs and Standards

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
119	52	MIL-S-5676 A #1 Splicing, Cable Terminal, Process For, Aircraft	Mil Spec	4-21-53	DOD Index of Specs and Standards
120	52	MIL-I-6865 B #2 Inspection, Radiographic	Mil Spec	5-25-60	DOD Index of Specs and Standards
121	52	MIL-F-7179 A Finishes and Coatings, General Specification for Protection of Aircraft and Aircraft Parts	Mil Spec	4-30-57	DOD Index of Specs and Standards
122	52	MIL-H-7199 Heat Treatment of Copper - Beryllium Alloys, Process For	Mil Spec	5-24-51	DOD Index of Specs and Standards
123	52	MIL-B-7883 #1 Brazing of Steels, Copper, Copper Alloys and Nickel Alloys	Mil Spec	1-28-54	DOD Index of Specs and Standards
124	52	MIL-W-8604 Rev 1 Welding of Aluminum Alloys, Process For	Mil Spec	10-8-59	DOD Index of Specs and Standards
125	52	MIL-W-8611 A Welding, Metal Arc and Gas, Steels, and Corrosion and Heat Resistant Alloys, Process For	Mil Spec	7-24-57	DOD Index of Specs and Standards
126	52	MIL-A-8625 A Anodic Coatings, for Aluminum and Aluminum Alloys	Mil Spec	12-14-54	DOD Index of Specs and Standards

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
127	52	MIL-R-11468 Radiographic Inspection, Soundness Requirements for Arc and Gas Welds in Steel	Mil Spec	9-27-51	DOD Index of Specs and Standards
128	52	MIL-R-11471 Rev 3 Radiographic Inspection of Metals	Mil Spec	2-8-62	DOD Index of Specs and Standards
129	52	MIL-P-16232 B Phosphate Coatings, Heavy, Manganese or Zinc Base for Ferrous Metals	Mil Spec	7-9-58	DOD Index of Specs and Standards
130	52	MIL-D-16791 C #1 Detergents, Nonionic	Mil Spec	6-27-61	DOD Index of Specs and Standards
131	53	PES-064-01 Rev A LMSC Plant Engineering Painting Specification	LMSC Plt Eng. Spec	12-26-62	Lockheed Aircraft Corp (LMSC) Plant Engineer- ing Stds Catalogue
132	53	TTSP-100 Thermo Tech. Inc., Denver, Colorado Installation of Aluminized Mylar Insulation	Coml Spec	-	Vendors Catalogue
133	54	MPS 10.31 C Thermocouple Wire, Preparation for Termination	LMSC Mfg Std	10-31-62	Lockheed Aircraft Corp (LMSC) Mfg Process Stds Index (8-1-63)
134	54	MPS 10.38 B Resistance Welding Foils and Electrical Conductors Thermo- couple Included	LMSC Mfg Std	8-1-63	Lockheed Aircraft Corp (LMSC) Mfg Process Stds Index (8-1-63)

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
135	54	P-40 Vendor Pac General Packaging Criteria	LMSC Mfg Std	5-8-62	Lockheed Aircraft Corp (LMSC) Materials Handling & Packaging Stds
136	54	DS-8938-4 Inserts and Studs, Keensert Installation and Removal	Lockheed Spec	-	Lockheed Aircraft Corp (LMSC) Parts & Com- ponents Manual
137	54	6540000 Rev C Spec. - Insulation, Installation of, Preliminary (Confid.)	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
138	54	6540003 Rev B Handling & Transportation Spec 9' Tank	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
139	54	6540004 Rev A Marking of Part Numbers, Serial Numbers and Inspection Marking	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
140	54	6540009 Rev A Cleaning of Cryogenic Stainless Steel Piping Systems	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
141	54	6540010 Rev A Installation of Plastic Foam in Instrumentation Header	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec
142	54	6540016 Rev A Strain Gage Installation for Cryogenic Application	NSP Spec	-	Lockheed Aircraft Corp (LMSC) NSP Spec

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<u>Item</u>	<u>Code</u>	<u>Document No. &amp; Nomenclature</u>	<u>Doc. Type</u>	<u>Date</u>	<u>Source</u>
143	54	6540020 Rev A External Instrumentation Installation, 5' Tank (Used on 9' Tank)	NSP Spec	--	Lockheed Aircraft Corp (LMSC) NSP Spec
144	54	10509302 Rev A Packaging & Packing of Parts, Repair Parts, and Components for Space Vehicles, General Spec For	Army Spec	5-16-60	Ordnance Corps Dept of the Army ABMA Spec